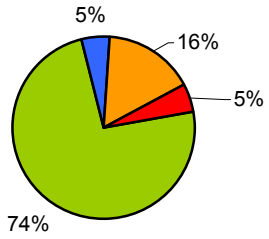
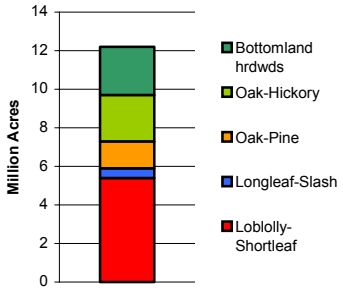
South Carolina Forest Facts:

Forestland comprises 12.3 M acres (65% of land use) in South Carolina

Forest landownership:



Forestland Composition:



Average Annual Fire Statistics:

	Number	Acres
Wildfire	4,950	29,009
Prescribed Fire	13,306	391,117

Figures modified from Connor, R.C. and R.M. Sheffield, 2000. South Carolina Forest Resources—2000 Update, USDA For. Ser. Res. Bull. SRS-65.
Fire Facts taken from 5-year averages (wildfire) and 2002 (prescribed fire). SC Forestry Commission 2002 Annual Report.

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Collaborators:

USDA Forest Service
Francis Marion & Sumter National Forest
Columbia, SC

USDA Forest Service
Southern Research Station
Charlston, SC

College of Charleston
Department of Geology & Geosciences
Charleston, SC

For References and Further Information:

White, L.H. and C.C. Trettin. 2004. Literature Review: A history and legacy of fire effect in the South Carolina Piedmont and Coastal Regions. USDA For. Ser. Res. Pap SRS-4103-XXX.

Or Contact:
USDA Forest Service
Southern Research Station
2730 Savannah Highway, Charleston, SC 29414
Phone: 843.769.7008
Fax: 843.766.8734
Email: lhwhite@fs.fed.us

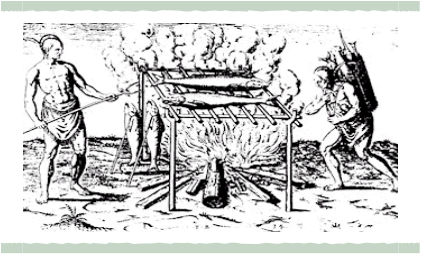
Prescribed Fire in South Carolina

A History and Legacy of Fire Effects in the Piedmont and Coastal Regions

Challenges to forest resource management in South Carolina include land use changes, forest fragmentation, expanding wildland/urban interface, and higher fuel loads. Communities and managers need to better understand effects of fuel treatments on forested ecosystems. Assessment of historic and modern fire regimes and fire effects will equip us with knowledge to implement sustainable forest management.

Land Use History In South Carolina

- Lightning ignited periodic fires before settlement.
- Native Americans used fire for settlement , agriculture, and hunting.



- European pioneers settled in South Carolina around 1600 and described the landscape as an expansive, rolling savannah.
- Agricultural and grazing practices, including cotton, corn, rice, and indigo, occurred intensively through the early 1900s.
- Widespread abandonment occurred thereafter, resulting in severe erosion in the Piedmont and sediment inundation to downstream and Coastal areas.
- The result was a highly fragmented and disturbed landscape with reduced productivity.
- The National Forests in SC and the SC Forestry Commission were created around 1930 to retire the farmlands, control soil erosion, regulate streams, and produce timber.

- A policy of fire supression was employed through the 1970s, resulting in hazardous fuel buildup and a successional shift from longleaf pine to other pines and hardwoods (less fire-dependent species).
- Forest managers now employ prescribed fire carefully on the regenerated forest landscape.

Prescribed Fire

Benefits

- Decreased hazardous fuel load
- Reduced health and safety risk in the wildland/urban interface
- Improved wildlife and livestock habitat
- Pest prevention and control
- Enhanced species composition and wood quality
- Improved forest health

Factors affecting burn Impact:

intensity (upward energy)
severity (downward energy)
climate
Season
antecedent fuel Conditions

Headstrip prescribed fire ignited on the FMNF following hurricane Hugo. Photo from Dale Wade, USDA For. Ser. Res. Sta, Athens, GA.

Concerns

- Human health and safety if fire gets out of control
- Air pollution
- Tree mortality or growth loss due to scorch
- Long-term effects on soil productivity and vegetative community

Summary of a Literature review: Prescribed Fire Effects in SC

Erosion

- Inherently low rates of soil erosion can increase following prescribed fire, but are still far too low to export significant sediment to waterways or cause landscape gullying.
- Soil erosion for forested systems is extremely variable, indicating a high sensitivity to differences in local and landscape level relief, climate, soils, vegetation, and management regimes.

Nutrients

- Prescribed fire typically consumes 25-40% of the forest fuel. This loss results in a 25-75% loss of various nutrients to the air (volatilization) or displacement to the mineral soil.
- Many studies have concentrated on nitrogen transformation as it is typically the growth-limiting nutrient for forested sites; recovery rates are usually considered adequate.
- Most studies indicate a “no effect” while others report a “fertilization” effect directly following fire, as a result of nutrient incorporation from incineration of the forest floor.
- Long-term studies in the Southeast are lacking and some suggest that nutrient loss by prescribed fire is much higher than natural replacement processes, especially for higher severity fires.

Vegetation

- Vegetative productivity is associated with soil fertility, although few have documented long-term changes due to fire.
- The appropriate fire frequency and seasonality for optimal vegetative growth is widely debated
- Summer burns are recognized as the most effective for excluding hardwoods and favoring a grassy understory, while winter burns are effective at reducing fuels.